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Title: Improvements in and relating to corrugated cardboard supports.

### DESCRIPTION

The present invention relates to improvements in corrugated cardboard

5 supports, particularly corrugated cardboard boxes.

Supports for displaying consumer goods in, for example, supermarkets are known in the art. However, such supports are normally comprised of a solid material to impart the necessary strength to the support. This results in the support occupying valuable space when not in use.

10 Packing materials for the support and protection of an article that is packaged within a box are also known. Generally, a polystyrene mould will be used that fits snugly around the article within the box. However, there is growing concern about the use of polystyrene and hence, it is desirable to provide an alternative packing support.

15 It is an object of the present invention to provide a blank for the construction of a support, in particular a corrugated cardboard box.

It is a further object of the present invention to provide an improved corrugated cardboard support, particularly but not exclusively a corrugated cardboard box, that aims to overcome, or at least alleviate the abovementioned drawbacks.

20 Accordingly, a first aspect of the present invention provides a corrugated cardboard blank for the construction of a support, the blank comprising two main body forming panels, a middle panel between said body forming panels and at least one end flap, each main body forming panel and middle panel having opposing side flaps, each side flap of the main body panels being provided with an indent.

It is to be appreciated that a support is assembled from the blank by folding the appropriate parts of the blank and securing them together using suitable means, most preferably an adhesive. The side flaps of the main panels are secured to the side flaps of the middle panel and the end flap is folded over and secured to the main  
5 panel. However, the side flaps of the main body panels are not secured to each other.

The provision of an indent in each side flap of each main body forming panel enables a side flap of one main body panel to engage with the adjacent side flap of the other main body panel when the blank is assembled to form an erect box, thereby forming a double blind box. Prior to engagement of the flaps, the box is in a flattened  
10 state. This enables the blank to be assembled into a box that may take on a collapsed or an erect state.

Opposing side flaps of each main body panel are preferably a mirror image of one another. Adjacent side flaps of adjacent main body panels are preferably identical.

15 Preferably, an end flap is provided at the end of each main body forming panel. More preferably, one of the end flaps is also provided with side flaps. A tab is preferably provided on each of the side flaps of the main body panels for attachment to the side flaps of the end flap and middle panel in the constructed box.

Each tab is preferably provided at the remote end of the indented region of  
20 each side flap. Preferably, a line of weakness is provided between each tab and its adjoining side flap.

Each side flap of the main body forming panels, middle panel and/or end flap is preferably provided with one corner that forms substantially a right angle and an

opposing corner which is truncated. Each tab provided on the side flaps of the main body forming panels preferably extends from the truncated end of the side flap.

It is preferable for fluting to be formed in the longitudinal direction of the blank, i.e. from one end flap to the other since this increases the strength of the box formed from the blank.

A second aspect of the present invention provides a corrugated cardboard support comprising two substantially parallel opposing main body panels and two pairs of opposing side walls wherein each of one pair of opposing side walls are formed from at least two interlocking parts.

The provision of a pair of opposing side walls that are each comprised of two interlocking parts enables the assembled support to be moveable from a collapsed state to an erect state. In the collapsed or flattened state, two parts of each wall are disengaged to allow each part to lie flat against its connecting wall or panel. In the erect state, the two parts of each wall become interlocked and lie substantially perpendicularly to their connecting wall or panel.

It is to be appreciated that the blank according to the first aspect of the present invention is preferably used in forming a support according to the second aspect of the present invention. Additionally, the main panels and walls of the support may be any desired size.

A varnish may be applied to the supports to impart water resistance.

For a better understanding of the present invention and to show more clearly how it may be carried into effect reference will now be made, by way of example only, to the accompanying drawings in which:

Figure 1 is a plan view of a blank for a double-blind box according to one embodiment of the present invention;

Figure 2 is a perspective view of an erect double-blind box according to the present invention assembled from the blank shown in Figure 1; and

5        Figure 3 is a perspective view of a double-blind box shown in Figure 2, shown in its collapsed form.

Referring to Figure 1 of the accompanying drawings, a plan view of a blank 2 for the construction of a double-blind box according to one embodiment of the present invention is illustrated. The blank is cut from a sheet of corrugated cardboard and  
10        creases are inserted into the blank to provide fold lines, represented by broken lines in Figure 1. Heavy dotted lines denote reverse fold lines. The blank has two main body forming panels 18, 20 connected by a middle section 19. The two main body forming panels 18, 20 are provided with end sections 17, 21 respectively opposite said middle section 19. Each main body panel has side flaps 11, 22, 14, 25 extending from each  
15        side thereof, each side flap having an indent I. One end of each flap is straight and the other opposing end nearest the indent is oblique. Each oblique end is provided with a tab 12, 23, 15, 26. The middle section 19 is also provided with side flaps 13, 24, one end being straight and the other being oblique. Similar side flaps 16, 27 are provided extending from one end section 21 but the opposing end section 17 is free from flaps.

20        The blank may be assembled to form a box 10 comprising two substantially parallel opposing main body panels (18, 20) and two pairs of opposing side walls (X, Y) wherein each of one pair of the opposing side walls (Y) are formed from two interconnecting parts (11, 14 and 22, 25) to enable the support to be moveable from a collapsed state to an erect state, as shown in Figures 2 and 3.

To form the box 10, side flaps 11, 22 are folded flat on to the main body forming panel 18 and the tabs 12, 23 are folded back to lie against the side flaps. Glue is then applied to the tabs 12, 23. The side flaps 12, 24 are then folded against the middle section 19. The main body forming panel 18 is then folded against the middle section 19 so that the tabs 12, 23 adhere to their adjacent side flap 23, 24. Side flaps 14, 25 are then folded on to the other main body forming panel 20 and the tabs 15, 26 are folded back to lie against the side flaps 14, 25. Glue is then applied to these tabs and the side flaps 16, 27 are folded flat against the end section 21. The end section 21 is now folded against the main body forming panel 20 so that the side flaps 16, 27 adhere to their adjacent tab 15, 26 respectively. Finally, glue is applied to the opposing end section 17 which is placed over to stick to the outer surface of the other end section 21 to form an assembled box 10, as shown in Figure 2. The construction of the box from a blank may be achieved using multi-point machine gluers at high speed.

As mentioned above, the construction of the box 10 is such that it may be provided in a collapsed form (Figure 3) or an erect form (Figure 2). Assembly of the box into its collapsed form requires the side flaps 11, 14, 22, 25 of the main body forming panels to be pressed inwardly such that they lie against their respective panel. Pushing inwardly the outer surface of the collapsed box, in particular the middle section 19 and end section 17, forces the side flaps away from their panel and the flaps lock together by means of the indent I. This forms a double blind box that is extremely difficult to re-collapse.

It has been found that the provision of fluting in the longitudinal direction C, shown in Figure 1, provides for a much stronger box thus enabling the box to support

greater weights. This is opposite to the direction of fluting provided in conventional corrugated cardboard boxes.

The direction of fluting and the provision of two blind ends in the box results in the erected box being inherently strong. Prior hereto one end of a box would be openable to enable items to be placed within the box. The box according to the present invention may be used as a support, for example acting as a display shelf to support goods that are for sale. The box has advantages over the prior art supports, such as its ability to be transported and stored flat until required and its ability to be recycled. It is also made of cheap materials.

A preferred application for a box according to the present invention is the construction of a pallet wherein a plurality of boxes are adhered to a top and bottom sheet to provide a pallet that is moveable from a collapsed to an erect state, as described in the Applicant's co-pending application. Any required size of pallet may be provided and the larger the pallet, generally the more boxes that will be used in its construction.